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ABSTRACT

Two studies examined the relationship between preschool and elementary school children's ability to delay gratification and their school behaviors, after controlling for differences in socioeconomic status (SES). Children's gratification control was measured through an age-appropriate dilemma that forced each child to exhibit gratification control to receive a preferred reward; gratification control was defined as the amount of time a child was able to wait for the preferred reward. Subjects for the first study were 35 4- and 5-year-olds who attended a pre-kindergarten program. Results indicated that 28 children waited the maximum 240 seconds and received the highest possible score. Children could in fact be categorized into those who easily waited and those who could not wait at all. Correlations between gratification control and verbal ability, non-verbal ability, and social skills were .29, .36, and .35, respectively. Because of the restricted range of gratification control and the homogeneity of the sample, none of the regression models involving socioeconomic status were highly explanatory. The participants in the second study were 49 third, fourth, and fifth graders. The gratification control task involved a maximum of 600 seconds for children to wait to receive a reward. Results indicated that gratification control was strongly related to language arts and mathematics grades and school behaviors. Gratification control was highly predictive of the dependent variable after controlling for SES. Only with mathematics grades as the dependent variable was SES significant. (Contains 10 references.) (KDFB)

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The Effects of Children's Ability to Delay Gratification on School Related Behaviors

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The Effects of Children's Ability to Delay Gratification on School Related Behaviors

Educators have long recognized that children's ability to delay gratification influences their ability to succeed in school. In a longitudinal study, Mischel, Shoda, and Peake (1988) found that preschool children who exercised greater gratification control were described more than 10 years later by their parents as more competent individuals. They found that children who more successfully controlled their gratification emotions as four-year olds were described by their parents as adolescents who were more academically and socially competent, verbally fluent, rational, attentive, and able to cope with frustration and stress.

Goleman (1995), in his well-received popular book Emotional Intelligence, emphasized the importance of general emotional factors such as gratification control, impulse control, and empathy in predicting school outcomes, life chances, and general happiness. He argued that these emotional factors which are developed early in childhood are more important in determining life success than more traditional factors such as intelligence.

Gratification control refers to an individual's ability to regulate their personal actions when faced with external stimuli (Mischel, 1981). Specifically, it refers to a person's ability to monitor feelings from moment to moment and to act in productive and appropriate ways.

Purpose of the Study

The purpose of the study was to determine the relationship between children's ability to delay gratification and school behaviors after controlling for differences in socio-economic status (SES). The study is actually two separate studies -- the first study evaluates gratification control in preschool children, and the second study evaluates gratification control in elementary children. The data was analyzed separately to assess the effect of gratification self-control for each age group.

Children's gratification control was measured by modifying the procedure of Shoda, Mischel, and Peake (1990). The procedure created an age-appropriate dilemma that forced each child to exhibit gratification control in order to receive a preferred reward. Gratification control was measured by the amount of time in seconds that a child was able to wait for the preferred reward. We adapted the procedure differently for pre-school and elementary children, and scores ranged from 0 to 240 for the pre-school group and from 0 to 600 for the elementary group.

By analyzing the two separate age groups, we attempted to determine if gratification control was more significantly related to school related behaviors at different development levels. Essentially, we anticipated that with older, elementary-age children, gratification control would be highly related to school behaviors; but, with younger, preschool children, gratification control would be less important in predicting school behaviors.

Study 1: Preschool Children

Children

The data for the preschool study was obtained from a sample of 35 four- and five-year old children who attended a pre-kindergarten program housed in the Child Development Center of a College of Education. The average age of the children in the study was 4.87 years. Although the center was required to attract children from diverse backgrounds, the children predominantly were from families with well-educated parents who chose to send their children to the center because of its excellent reputation. Of the 35 children, 22 of their fathers have earned 4-year college degrees with 10 holding doctorates of various types; 15 of their mothers have earned 4-year college degrees with 2 holding doctorates.

The curriculum and activities of the center are based on the philosophy that children learn by doing and play is the child's most fundamental way of knowing. All aspects of the program are based on an integration of the High Scope Curriculum (Hohman & Weikart, 1995) and Creative Curriculum (Bredekamp, 1987; Dodge & Colker, 1992) models. Teachers prepare learning experiences based on the needs, interests, and developmental level of the children. They develop close relationships with the children and their families through various group activities.

Instruments

Gratification Control was measured in preschool children through an age-appropriate dilemma. Each child was shown a small

bowl of M and M's chocolates and a small bowl of pretzels. The child was asked which treat she preferred. The child was then told that if she could wait until after the researcher ran an errand she could have the preferred snack. If the child did not want to wait, she could ring the bell on the table and receive the less preferred snack. Gratification control was measured by the amount of time in seconds that the child waited. It was determined by the researchers, center teachers, and parents that if the child waited for 240 seconds (4 minutes), she should receive the preferred treat. Thus, gratification control scores had a potential range of 0 to 240.

SES of the children was measured through self-reported information from the children's parents. The concepts of Entwisel and Astone (1994) were implemented using the Occupational Index scale established by Nakao and Treas (1992). The SES scale incorporated information regarding the educational level and occupational status of the parents who were living in the household of the child.

Verbal and Nonverbal Abilities of the preschool children were measured by the Kaufman Brief Intelligence Test (K-BIT) (Kaufman & Kaufman, 1990). The K-BIT is not considered a comprehensive intelligence test, but is designed to measure young children's intellectual potential for use in intervention and enrichment activities. Standard scores were derived for verbal and nonverbal abilities. For four-year old children, the internal consistency

of the test is consider good (verbal - α = .89; nonverbal - α = .74) (Kaufman & Kaufman, 1990).

Social Skills were measured using the Social Skills Rating System (SSRS) (Gresham & Elliot, 1990). The two teachers who lead the pre-kindergarten program rated each child on the positive social skills section of the SSRS. This instrument measures children ability to share, help, initiate relationships, request help, give compliments, and demonstrate other age-appropriate social skills. When teachers complete the rating scale, the internal consistency is strong (α = .93). The test-retest reliability of teachers' evaluations is also acceptable (r = .85). Like the K-Bit, the SSRS provides norm referenced standard scores.

Results

Descriptive statistics and the correlations of the key variables are presented in Table 1. The descriptive statistics indicated that the group as a whole was above national averages in verbal and nonverbal abilities and social skills. Further, because of the relatively high SES of the group, SES did not relate to the other variables in the expected fashion. For example, SES had a small negative relationship to verbal ability (r = -.20).

Insert Table 1 Here

The group of preschool children were strong in gratification

control. Of the 35 children tested, 28 children waited the maximum 240 seconds and received the highest possible score. In fact, the children for gratification control could be categorized as those children who easily waited and those children who could not wait at all. Consequently, a range restriction problem developed and potentially attenuated the relationships of gratification control to school behaviors. The correlations between gratification control and verbal ability, non-verbal ability, and social skills were .29, .36, and .35, respectively.

Regression models were derived to assess the relationship between gratification control and SES on verbal ability, non-verbal ability, and social skills. Because of the restricted range of gratification control and the homogeneity of the sample none of the regression models were highly explanatory. The squared multiple correlational coeficients for the models were as follows: Verbal Ability - $R^2 = 0.07$, Non-Verbal Ability - $R^2 = 0.11$, and Social Skills - $R^2 = 0.03$. None of the variables in the models were significant.

Study 2 - Elementary Children

Study 2 analyzed the influence of gratification control for elementary children. The purpose of this study was to assess the influence of gratification control on language arts and mathematics performance and student behavior controlling for the SES background of children.

Students

The participants in the second study were 49 randomly

selected third, fourth, and fifth grade students from an elementary school. The school was located in a community of 20,000 people in a rural area approximately 50 miles from a major metropolitan area in the southeastern United States. The school had a 40% minority population, and 35% of the students qualified for free or reduced priced school lunches.

The average age of the children in the study was 9.67 years. Of the children particpating in the study, 23 were girls and 26 were boys; 18 qualified for free or reduced lunches and 21 did not qualify; 30 were White Americans, 15 were African Americans, 3 were Asian Americans, and 1 was Hispanic American.

Instruments

Gratification Control was measured in a similar fashion as in Study 1. The same dilemma of M-M's or pretzels was presented to the children with the only difference being related to time. Because the children were older, they were given a maximum of 10 minutes or 600 seconds to wait before receiving the treat of choice. Thus, for the elementary children gratification control scores ranged from 0 to 600.

SES was measured differently in Study 2. Students who qualified for free or reduced price lunches were classified as lower SES and students who did not qualify were classified as middle SES.

Language Arts and Mathematics grades were obtained for the past semester from school records. In this school, students are graded on a percentage basis (0 - 100), with 92% being interpreted

as the minimum criteria for an A grade.

School Behavior. School behavior was assessed from school disciplinary records. Every time a youngster was refer to the principal's office during the preceding 6 months for disruptive, aggressive, or violent behavior they received a behavior point. Points were summed to derive a student behavior score; thus, a high score of school behavior is indicative of poor behavior.

Results

Table 2 presents the descriptive statistics and correlations of the variables in the study. Unlike the preceeding study, the elementary children varied in their ability to control their gratification, and gratification control was strongly related to the dependent variables of language arts grades, mathematics grades, and school behaviors. The correlations between SES and the dependent variables were also strong; thus, the question regarding the significance of the gratification control on the dependent variables after controlling for SES was of particular interest.

Insert Table 2 Here

The proposed multiple regression models in this study were all highly predictive of the dependent variables. The variables from the three models and the interpreted statistics are presented in Table 3. In all three models, gratification control was highly predicted of the dependent variable after controlling for SES.

Using the conventional $p < .05$ criteria, only with mathematics grades as the dependent variable was SES significant.

Insert Table 3 Here

The effect size for gratification control in predicting language arts grades was 0.027. In other words, after controlling for the effects of SES, for every increase of one second in gratification control, language arts grades were predicted to increase 0.027 points. An increase in 1 minute of gratification control had a predicted increase of 1.67 points. To illustrate the importance of gratification control, if a child with below average gratification control increased her score by 6 minutes, her predicted increase in language arts grade was 10.02 points. Applying the same illustration to mathematics, an increase of 1 minute had a predicted increase of 1.44 points. An increase of 6 minutes in gratification control had a predicted increase of 8.66 in mathematics grade. For school behaviors, an increase of 1 minute had a predicted decrease of 0.18 negative behavior incidents. An increase of 6 minutes had a predicted decrease of 1.08 negative school behaviors.

Based upon these findings, gratification control was highly predictive of language arts grades, mathematics grades, and negative school behaviors. The predictive power of gratification control remained strong after controlling for SES, and the effect size was large so that, if children significantly improved their

gratification control, associated school behaviors were predicted to improve measurably.

Conclusions and Discussion

The mixed findings of this study are difficult to interpret. With the elementary sample, the importance of gratification control was confirmed supporting previous research and conclusions (Goleman, 1995; Mishel et al., 1988; Mishel, 1981). The findings support the relationship between gratification and important school-related behaviors. The strength of these relationships indicated that gratification control highly influences the success of children in schooling.

The results of the preschool study are more difficult to discern. Initially, we anticipated that most preschool children would lack gratification control, and that the relationships would be less significant because of this. Instead, we found that a large proportion (80%) of the preschool children had excellent gratification control. As a side point, during the study, we came to believe that the snacks were not creating a strong enough dilemma, and we decided to try an alternative dilemma. The alternative dilemma involved the choice of two small toys. This new dilemma was no more effective that the first dilemma in creating variance in the children's gratification control.

The only conclusion that we can make from the preschool study was that we had an exceptional group of children. Their high mean scores in verbal ability, nonverbal ability, and social skills indicate they are talented and not representative of most

preschool children. They came from homes with highly-educated parents and attended a preschool with an excellent reputation. The findings tended to confirm either the effectiveness of their parents in teaching the children gratification control or in the school curriculum in instilling these ideas or both.

A future study similar to this study utilizing children from a preschool with a more heterogeneous population would help to illuminate the development differences in children's ability to delay gratification. Such a study would assist educators in understanding the importance of gratification control, its relationship to school behaviors, and when the most appropriate time to begin teaching gratification control to children occurs.

Table 1

Descriptive Statistics and Correlations of SES, Gratification Control, and Scores for Verbal and Non-Verbal Abilities and Social Skills

Variable	*M*	*SD*	SES	Grat.Con.	Verbal	Non-verb
SES	25.41	6.90	--			
Grat. Control	205.29	76.65	-.08	--		
Verbal	110.17	11.56	-.20	.29	--	
Non-verbal	104.63	12.80	.10	.36*	.33*	--
Social Skills	105.09	15.10	-.01	.17	.35*	-.07

Note. n = 35, *p < .05.

Table 2

Descriptive Statistics and Correlations of SES, Age, Gratification Control, Language Arts, Mathematics, and School Behavior

Variable	M	SD	SES	Age	Grat. Control	Lang. Arts	Math
Age	9.67	0.98	.14				
Grat. Control	331.61	4.89	.30*	.20			
Language Arts	78.80	9.12	.33*	.10	.70***		
Mathematics	77.73	8.82	.41**	.17	.65***	.80***	
School Behavior	1.06	1.09	-.39**	-.27*	-.65***	-.68***	-.64***

Note. n = 49, *p < .05, **p < .01, ***p < .001.

Table 3

Findings from the Multiple Regression Models using Gratification Control to Predict Language Arts, Mathematics, and School Behavior

Model/Variables	R^2	b	SE	t	p
Language Arts Grades	.50				
SES		2.644	2.036	1.30	0.2006
Gratification Control		0.028	0.004	6.02	0.0001
Mathematics Grades	.44				
SES		4.273	2.017	2.12	0.0396
Gratification Control		0.024	0.005	5.24	0.0001
School Behavior	.47				
SES		-0.481	0.252	-1.91	0.0621
Gratification Control		-0.003	0.001	-5.22	0.0001

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